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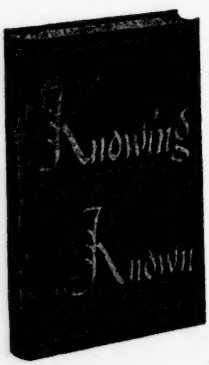

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THE JOURNAL OF PHILOSOPHY

"NON-ACCIDENTAL" AND COUNTERFACTUAL SENTENCES [1]

STUDIES by Chisholm,[2] Goodman,[3] and Will,[4] have clarified the problem of analyzing counterfactuals. Their work lends much support to the conviction that counterfactuals and universal sentences called "laws" are somehow interconnected, and difficult to disentangle. The following question may be said to emerge from their writings: is it possible to specify the characteristics which a true universal sentence must have in order to yield true counterfactuals, without making any circular reference to the ability to yield such counterfactuals? I shall refer to this question as "Question A." Chisholm and Will employ the term "accidental" to apply to true universal sentences which, like "All horses in that barn are black," are said to yield no true counterfactuals, and the term "non-accidental" to apply to true universal sentences which, like "All matches which are struck light," are said to yield true counterfactuals. Chisholm, in particular, is disturbed by the difficulty of finding a pair of definitions (of "non-accidental" and "yielding true counterfactuals") which are non-circular.

In the present paper I shall attempt to provide an affirmative answer to Question A. There is a kind of circularity involved in any attempt to answer this question affirmatively as it stands (as will shortly be brought out), but the characteristics possessed by all true sentences which yield true counterfactuals, which I shall call "C-characteristics," can be specified without reference to counterfactuals. The terms "accidental" and "non-accidental" will be adopted in this paper to express an important distinction; however, for reasons which will be pointed out later, this particular pair of terms will not here be defined in such a way as to render the class of non-accidental sentences coextensive with the class of all true sentences which yield true counterfactuals.

[1] I am indebted to Sidney Morgenbesser and Monroe Beardsley for their careful and critical consideration of this paper. They should not be held responsible, however, for any of the ideas here set forth.

[2] Roderick M. Chisholm, "The Contrary-to-Fact Conditional," *Mind*, n.s., Vol. 55 (1946), pp. 289–307.

[3] Nelson Goodman, "The Problem of Counterfactual Conditionals," this JOURNAL, Vol. XLIV (1947), pp. 113–128.

[4] Frederick L. Will, "The Contrary-to-Fact Conditional," *Mind*, n.s., Vol. 56 (1947), pp. 236–249.

A second question concerning the relation between laws and counterfactuals is more difficult to deal with. This question is closely connected with problems discussed by Goodman in the second portion of his paper, although he does not formulate any of his problems in the terms used here. The question now under consideration runs as follows: even if it is possible to specify the C-characteristics without referring to counterfactuals, is it also possible to specify criteria for the *truth* of sentences possessing C-characteristics without referring to their ability to yield true counterfactuals? This will be called "Question B." An indication of the writer's position with regard to Question B seems required for a clear understanding of what follows.

I should maintain that Question B can be answered affirmatively, literally speaking, but that such an answer is misleading because it is much too simple. The question is, however, often asked in such a way as to suggest that the answer is negative. There is some ground for this suggestion. It is true that there are not two separate processes of verification to be carried out, one for "true universal sentences with C-characteristics" and one for "true counterfactuals." This does not necessarily mean, however, that ability to yield true counterfactuals is a criterion for the truth of universal sentences possessing certain other characteristics. In fact, ability to yield true counterfactuals can not be a criterion for the truth of such universal sentences, because *there is no independent criterion for the truth of a counterfactual.* Even those writers who have appeared tacitly to assume that we do possess such a criterion have never, so far as I know, offered a single suggestion as to its nature. On the view to be developed in this paper, it is the truth of the sentence which yields it, plus the possession by that sentence of other characteristics to be specified, which serves as the criterion of the truth of any counterfactual, and not, even to the smallest extent, *vice versa.*

What then becomes of the difficult and important problem of describing how we come to accept as true any sentences possessing C-characteristics? This problem is closely related to, if not identical with, the problem of ascertaining how laws are confirmed. It remains unaffected by a study of counterfactuals. For a solution to it, we are thrown back to an examination of the relation between determination of positive instances and prediction of undetermined instances. Fortunately, we need not carry out this examination before counterfactuals can be analyzed; indeed, to attempt to deal simultaneously with problems of induction and the problem of analyzing counterfactuals has an almost paralyzing effect. It may seem, then, that the present study will have little contribution to

make to an understanding of the nature of "laws," and, in a sense, this is true. Nevertheless, if the assertions which have just been made regarding the relation of counterfactuals to the sentences which yield them can be substantiated, this will help us to formulate questions about laws more precisely and a little more narrowly, even if it does not tell us how to answer these questions.

I have considered Questions A and B in this preliminary discussion in order to indicate briefly the relations of my view to certain other opinions.[5] The two basic questions which I shall try to answer in the major portion of this paper, however, are formulated differently. These questions are: "What sentences yield true counterfactuals?" (Question 1); and "What is said in a counterfactual?" (Question 2). It is obvious that the treatment of the first question has been anticipated to some extent in the remarks made above regarding Questions A and B. The answers to Questions 1 and 2 will be offered in sections II–1 and II–2; these answers will require several distinctions, which will be set forth in terms of a number of predicates to be defined in sections I–1, I–2, and I–3.

It is necessary to make clear at the outset the sense in which the term "counterfactual" will be used here. I use this term to refer to any conditional formulated in the subjunctive mood in which the antecedent is represented as being either vacuous or false. This class includes general conditionals, such as "If anyone had jumped in front of that moving train, he would have been hurt," and singular conditionals, such as "If I had jumped in front of that moving train, I would have been hurt." In most conditionals in which the antecedent is represented as being false, the consequent is also so represented.[6] General counterfactuals, however, do not include in their meaning any information regarding the vacuous or non-vacuous character of their consequents.

What is denied, in general sentences of the kind just examined, is that there exists (in the timeless sense) any entity of such and such a kind. Nothing is said, in the sentences to which the term "counterfactual" will here be applied, about the "possibility" or "impossibility" of an entity's existing.

In addition to what is denied in a counterfactual, something is also, of course, asserted, and this assertion concerns both the antecedent and consequent. The counterfactual is thus a conjunction of two or more sentences, of which the sentence that denies that something exists will here be called the "negation-sentence" of a

[5] I regret that a discussion of these problems by K. R. Popper, "A Note on Natural Laws and So-Called 'Contrary-to-Fact Conditionals,'" *Mind*, n.s., Vol. 58 (1949), pp. 62–66, appeared too late for me to consider it in this paper.

[6] See Goodman's discussion of "semifactuals," *op. cit.*, pp. 114–115.

counterfactual. The other sentence or sentences will be called the "core-sentence" or "core-sentences" of the counterfactual. The statement that a counterfactual includes a negation-sentence, as well as the statement that in a general counterfactual this negation-sentence is of the form "There is no x such that x is F," while in a singular counterfactual it is of the form "It is not the case that A is F," is analytic. That is to say, sentences not interpreted in this way are not here called "counterfactuals." The statement that there are one or more residual sentences contained in counterfactuals is also analytic. But the statement, eventually to be made, that the portion of a counterfactual which is not the negation-sentence is to be analyzed in a certain way is intended to be non-analytic, and testable in the same way that any other analysis of meaning is testable.

I–1

Most of what follows in I–1, I–2, and I–3 will be a classification of universal conditionals into various groups. With the exception of the first two, all the predicates to be defined in section I apply only to universal conditionals which are synthetic formal implication conditionals. This qualification will not be repeated in connection with each definition.

In I–1, I shall define the following terms: (1) "restricted," (2) "temporally restricted," (3a) and (3b) "multiple" in two contexts, and (4) "unique." The definitions of these terms will be numbered in this way as they are given. "Restricted" and "temporally restricted" are the only two terms defined in section I which apply to sentences that are not formal implication synthetic conditionals.

(1) A sentence is *restricted* if and only if it is either (*a*) a universal conditional sentence containing in its antecedent a name or a definite description, or (*b*) an existential sentence containing a name or a definite description. Examples of restricted conditionals are: "All sons of Kant were philosophers," "All who registered in Pennsylvania before September 12, 1948, were permitted to vote," "All children of the woman who discovered radium were girls." Examples of restricted existential sentences are: "No one is a son of Kant," "Someone came to this room yesterday." Universal conditionals containing in their antecedents no name or definite description, and existential sentences containing no name or definite description, will be called "unrestricted."

A subclass of restricted sentences which is of special importance to the present inquiry is that of "temporally restricted" sentences

(2) A sentence is *temporally restricted* if and only if it is either (*a*) a universal conditional sentence containing in its antecedent a name or a definite description which refers to a portion of time, or (*b*) an existential sentence containing a name or a definite description which refers to a portion of time. Universal conditionals containing in their antecedents no such name or description, and existential sentences containing no such name or description, will be called "temporally unrestricted." The portion of time named or described in a temporally restricted sentence may, of course, be of any duration, and may be past, present, or future with reference to the time of formulating the sentence. Expressions like "now," "yesterday," "next Christmas," etc., must be translated into names of portions of time before the sentences in which they occur can be fully understood and verified; consequently sentences containing expressions of this kind are temporally restricted. The tense of the verb in some conditionals serves as an implicit temporal restriction. This is the case, e.g., in the sentence "All who have sent in their applications will be admitted"; the qualification "before the present time" is here understood as belonging to the antecedent. The sentence "All who have had measles are immune," however, is temporally unrestricted, since the tense of the verb in the antecedent here refers to a temporal relation between the event referred to in the antecedent and that referred to in the consequent. Some sentences appear to be temporally unrestricted, but can be accepted as true generalizations only if the temporal restriction "up to the present time" is supplied, or if a tense is supplied for a verb which at first seems to be tenseless. An example is the sentence "All presidents of English-speaking democratic countries who hold office during civil wars are assassinated."

If the term "counterfactual" is used in the sense specified earlier in this paper, it seems clear that all general counterfactuals should be regarded as temporally restricted. Even if the temporal restriction is not explicit, the tense of the verb in a counterfactual appears to serve as an implicit temporal restriction. The verb "exist" (the first "is") in the negation-sentence is of course tenseless, but the expression "is *F*" in this sentence contains a temporal restriction, and the negation-sentence as a whole is thus a temporally restricted existential sentence. The most completely general counterfactuals are those which cover all times prior to the time of formulation, or all times subsequent to the time of formulation. Examples are: "If any human being had ever reached the height of twelve feet, he would have died at an early age" and "If any human being should ever reach the height of twelve feet, he would

die at an early age.''[7] We can not combine two counterfactuals of this kind into a single non-compound counterfactual sentence, but we can of course conjoin counterfactuals, and thus cover all times, past, present, and future. Each separate counterfactual, however, contains a reference to a particular portion of time. This is not to deny that we can formulate temporally unrestricted conditionals which are similar in important respects to counterfactuals; such sentences will be encountered later.

A few comments regarding this assertion that all counterfactuals are most satisfactorily interpreted as being temporally restricted are now in order. It is intended to be synthetic, and I believe it to be true. It is admittedly very convenient for the analysis here to be offered to assume that it *is* true, and I propose to take full advantage of this convenience. Nevertheless, I do not believe that the essential features of my analysis require the assumption that counterfactuals are all temporally restricted. I believe, though I shall not here defend this belief, that comparatively minor changes in certain definitions would suffice to extend the analysis to any counterfactuals regarded as being temporally unrestricted.

Temporally unrestricted sentences, it must be noted, are not here regarded as ''timeless'' in the sense of having nothing to do with time. They state that a connection between two kinds of events or states of affairs holds ''at all times.'' A full analysis of such sentences, that is to say, includes a time-variable universally quantified. The sentence ''All children of blue-eyed parents have blue eyes,'' e.g., can only be completely rendered as ''For every x and every time, if x is a child of blue-eyed parents at time t, then x has blue eyes at time t.'' If the temporal relation between the event referred to in the antecedent and that referred to in the consequent is one of simultaneity, the time-variable is often omitted in formulating a temporally unrestricted conditional. But, though for many purposes the presence of this variable can be disregarded, for an understanding of the present problems it can not be wholly forgotten.

The distinction between ''multiple'' and ''unique'' sentences concerns the variables of universal conditional sentences. It is similar to the distinction between ''vacuous'' and ''non-vacuous'' conditionals. (3a) A universal conditional which is not equivalent to a conjunction of conditionals is *multiple* if and only if there are at least two sets of arguments which have no members in common

[7] This formulation is ambiguous in English; but it is clear that I wish here to consider a counterfactual in a future tense, and not a non-counterfactual subjunctive conditional. Expressions of the latter kind will be briefly discussed in the concluding section of this paper.

and for which the antecedent of the conditional is true. (3b) A universal conditional which is equivalent to a conjunction of conditionals is *multiple* if and only if each of the conjoined conditionals is such that there are at least two sets of arguments which have no members in common and for which the antecedent of the conditional is true. Definition (3b) is necessary in order to exclude from multiple status sentences like Goodman's sentence "Everything that is either a radiator that freezes but does not reach below 35° F., or that is a soap bubble, breaks." Note that a conjunction of conditionals may be multiple even when the arguments for which the antecedents of the conditionals are true coincide completely; what is required is only that for each conditional in the conjunction there be at least two sets of such arguments which have no members in common. (4) A universal conditional is *unique* if and only if (i) there is one set of arguments for which its antecedent is true (set S) and (ii) any other set of arguments for which its antecedent is true has at least one member in common with set S. The question of whether a sentence is multiple or unique does not affect either its meaning or its truth. Examples of multiple and unique sentences will be given in a later context.

I–2

In this section, definitions will be given for the following terms: (5) "derived," (6) "conditionally derived," (7) "analytically derived," (8) "subsumed," (9) "conditionally subsumed," and (10) "analytically subsumed." In these definitions, reference to the time-variables will for the sake of simplicity be omitted; but it is to be understood that a full rendering of the sentences in question must include them.

The three terms "derived," "conditionally derived," and "analytically derived" apply only to unrestricted universal conditionals. (5) An unrestricted universal conditional is *derived* if and only if it is either conditionally derived or analytically derived. (6) An unrestricted universal conditional is *conditionally derived* if and only if it meets the following requirements: (i) it is of the form "For every x and every y, if x is F and y has relation R to x, then y is G"; and (ii) there is a characteristic "H" such that the sentence "For every x and every y, if x is H and y has relation R to x, then y is G" is true, multiple, and unrestricted; and (iii) the sentence "For every x, if x is F, then x is H" is true, synthetic, and non-vacuous.

Let us now consider a sentence which meets the requirements just given. Such a sentence is "Everyone who drinks cow's milk regularly in childhood has good teeth." This can be rephrased as

"If anything is cow's milk, and anyone drinks it regularly in childhood, that person has good teeth," and thus requirement (i) is met. There exists a characteristic, namely, that of being a liquid containing calcium, such that the sentence "If anything is a liquid containing calcium, and anyone drinks it regularly in childhood, that person has good teeth" is true, multiple, and unrestricted. The latter sentence is obviously unrestricted; and it is multiple because there have been at least two different things at different times which were liquids containing calcium, and at least two different people at different times who have drunk these liquids. (The sentence may here be assumed to be true, any oversimplification involved being irrelevant to the present problem.) Requirement (iii) is met by the original sentence, because the sentence "If anything is cow's milk, it is a liquid containing calcium" is true, synthetic, and non-vacuous. The original sentence is therefore conditionally derived. This is an instance of a conditionally derived sentence which is non-vacuous; there are, however, vacuous sentences which meet these same requirements. If, for example, no human being has ever drunk yak's milk regularly in childhood, and if yak's milk is a liquid containing calcium, then the sentence "Everyone who drinks yak's milk regularly in childhood has good teeth" is both vacuous and conditionally derived. The predicate "conditionally derived" does not, however, attach automatically to all vacuous sentences. The sentence "Everyone who drinks yak's milk regularly in childhood has poor teeth," for example, though true, is not conditionally derived.

(7) An unrestricted universal conditional is *analytically derived* if and only if it meets the following requirements: (i) it is of the form "For every x, if x is F, then x is G"; and (ii) there is a characteristic "H" such that the sentence "For every x, if x is H, then x is G" is true, and either multiple or conditionally derived, and unrestricted; and (iii) the sentence "For every x, if x is F, then x is H" is analytic but does not assert identity. The sentence "All matches which are struck in winter light" is analytically derived. It may be rephrased as "If anything is a match which is struck in winter, it lights," which is of the required form. There is a characteristic, that of being a match which is struck, which enables us to formulate the sentence "If anything is a match which is struck, it lights." This sentence is true, multiple, and unrestricted. Finally, the sentence "If anything is a match which is struck in winter, it is a match which is struck" is analytic, but does not assert identity. The vacuous sentence "All unicorns are mortal" is analytically derived, because "All animals are mortal" is true, multiple, and unrestricted, and "All unicorns are animals" is analytic.

The vacuous sentences "All unicorns are immortal" and "All unicorns like peanut butter," are not analytically derived. The sentence "All people who drink yak's milk regularly in childhood while standing on one leg have good teeth" is analytically derived; but in this case the sentence mentioned in requirement (ii), namely, "All people who drink yak's milk regularly in childhood have good teeth," is itself conditionally derived rather than multiple.

The terms "subsumed," "conditionally subsumed," and "analytically subsumed" apply only to restricted universal conditional sentences. These terms are similar to the terms just defined, except that it is required that the restricted sentences in question be entailed jointly by an unrestricted sentence and a restricted sentence which are of certain forms and which possess certain characteristics. The requirements now to be given, in other words, are designed to eliminate the reference to an individual entity which characterizes restricted sentences.

(8) A restricted universal conditional sentence is subsumed if and only if it is either conditionally subsumed or analytically subsumed. (9) A restricted universal conditional is *conditionally subsumed* if and only if it meets the following requirements: (i) it is of the form "For every x, if x has relation R to the individual entity A, then x is F"; and (ii) there is a characteristic "G" such that the sentence "For every y and every x, if y is G and x has relation R to y, then x is F" is true, either multiple or derived, and unrestricted; and (iii) the sentence "A is G" is true and synthetic. Whether "A" in the original sentence is a name or a description, the unique entity to which it refers is thus brought under the scope of a general principle, i.e., the unrestricted sentence referred to in requirement (ii). The individuality of the entity named or described is therefore, in a sense, eliminated: what is said in the original sentence about all things having a certain relation to this individual entity is seen to hold true by virtue of some characteristic which the individual in question shares with other entities. The restricted sentence "Everyone in Building B at Time T was hurt" is conditionally subsumed, whether or not it is vacuous. The sentence referred to in requirement (ii) is this: "If anything is a building which is demolished at a given time, and any person is in that building at that time, that person is hurt." This sentence is true, unrestricted, and multiple. The sentence referred to in requirement (iii), "Building B is demolished at Time T," is true and synthetic.

The restricted sentence "Everyone in Building B at Time T had blue eyes," however, is not conditionally subsumed, though it may be non-vacuous and true. This sentence may even be entailed by

an unrestricted sentence which is true and multiple, namely, "Everyone who has blue-eyed parents has blue eyes," together with a true restricted sentence, "Everyone in *B* at *T* had blue-eyed parents." But because the latter sentence is not of the correct form, i.e., is not a statement *about* the entities "*B*" and "*T*," the original sentence is not conditionally subsumed. An example of a conditionally subsumed sentence entailed by an unrestricted sentence which is derived rather than multiple is "Everyone who drinks milk from Animal *A* regularly in childhood has good teeth." The derived unrestricted sentence in question is "Everyone who drinks yak's milk regularly in childhood has good teeth," and the sentence referred to in requirement (iii) above is "Animal *A* is a yak." In this case the derived unrestricted sentence used is not multiple; but many sentences are, of course, both derived and multiple.

(10) A restricted universal conditional is *analytically subsumed* if and only if it meets the following requirements: (i) it is of the form "For every *x*, if *x* has relation *R* to *A*, then *x* is *F*"; and (ii) there is a characteristic "*G*" such that the sentence "For every *x*, if *x* is *G*, then *x* is *F*" is true, unrestricted, and either multiple or derived; and (iii) the sentence "For every *x*, if *x* has relation *R* to *A*, then *x* is *G*" is analytic, but does not assert identity. The restricted sentence "All matches struck in this room yesterday lit" is analytically subsumed, whereas the restricted sentence "All matches struck in this room yesterday were two inches long" is not analytically subsumed.

The possibility that a sentence may contain two different restrictions, with respect to one of which the sentence is conditionally subsumed and with respect to the other of which it is analytically subsumed, must be admitted. Such sentences could be accounted for in the present classification by slight modifications of certain definitions; but they do not seem sufficiently important to warrant doing this here.

I–3

In this section I shall define three terms: (11) "non-accidental," (12) "accidental," and (13) "fundamental." Some problems which arise in connection with the definitions proposed will also be discussed. The terms "non-accidental" and "accidental" apply only to universal conditional sentences which are true. (11) A true universal conditional is *non-accidental* if it is either derived or subsumed. (12) A true universal conditional is *accidental* if it is neither derived nor subsumed.

As was indicated at the beginning of this paper, these are not definitions which will enable us to say that the class of true sen-

tences which yield true counterfactuals is coextensive with the class of true sentences which are non-accidental. I shall discuss true sentences which "yield true counterfactuals," and it would of course have been possible to define "non-accidental" in terms of those characteristics which such sentences possess. It is not possible, however, to designate by a single term the characteristics possessed by true sentences which yield true counterfactuals and also the characteristic of "explainability in more general terms" which is possessed by *both* derived and subsumed sentences. Since it is desirable to avoid a wholly arbitrary departure from common usage in framing definitions, "non-accidental" has here been chosen to refer to the property of explainability. This procedure has at least some support from common usage, according to which those occurrences for which an explanation is known are denied to be "accidental." It can not of course be maintained that any attempt to transfer an ordinary predicate of object-language to the more narrow and precise language of syntax can preserve all of the varying original meanings of the word.

We must now examine the sentences which fall, as a consequence of these definitions, into the "accidental" category, for objections may be raised to the characterization of some of these sentences by this term. Among these accidental sentences, vacuous sentences which are neither derived nor subsumed need not concern us long. They are of no special importance in our inquiry, and any paradoxical aspect of speaking of them as "accidental" is only a consequence of the original paradox involved in speaking of them as "true." Non-vacuous sentences that are true but neither subsumed nor derived are far more important, and will be considered separately.

In the group of true non-vacuous restricted sentences that are not subsumed we find most if not all of the sentences cited by other writers as being unable to yield true counterfactuals. Chisholm's sentence "All lawyers living in a certain community in 1946, had three children," Goodman's sentence "Everything in my pocket on V-E Day was silver," and Will's sentence "All new-born children of the Rh-negative woman W born after a normal pregnancy and themselves Rh-positive are healthy children with a normal red blood count," are all of this kind. Will's sentence is true without being temporally restricted if we make the assumption (said by Will to be optional) that Woman W will have no more children; but the sentence in question is still restricted, and, though non-vacuous and true, not subsumed. On the other hand, the restricted sentence "All children born to Woman W and Man M are blue-eyed," if we assume that Woman W and Man M have blue eyes, *is* sub-

sumed. The application of the term "accidental" to restricted sentences which are non-vacuous and not subsumed does not, in any case, appear to be open to any objection. Note that to deny that we know any principle in terms of which "Everyone in Building B at Time T has blue eyes" is subsumed is not to deny that we can account for the possession of blue eyes by each separate individual who was in B at T. It is merely that we have no information enabling us to deduce a connection between space-time location at this point and the possession of blue eyes.

We must now consider true non-vacuous sentences which are unrestricted but not derived. These include sentences of two very different kinds: those which are multiple and those which are unique. (There are, of course, both multiple and unique sentences which are derived, but we are here examining only those which are not derived.) Unique sentences are very important in the present inquiry. This importance follows from the fact that any restricted sentence can be translated into an unrestricted sentence by the use of uniquely applying predicates, or, as Goodman put this point, the fact that "the most special descriptions of particular facts can be cast in a form having any desired degree of syntactical universality."[8] One method for obtaining translations of this kind consists in discovering some attribute possessed by the individual entity named or described in the restricted sentence which is possessed for the first time, i.e., some attribute possessed by no entity which is both a member of a certain class to which the first entity belongs and also a predecessor of that entity. For example, the restricted sentence "All offspring of the first gorilla born in captivity were male" can be translated into the unrestricted sentence "For every x and every time and every y, *if* x is a gorilla born in captivity at time t, *and if* there is no z such that z is a time and x is a gorilla born in captivity at z and z is earlier than t, *and if* y is an offspring of x, *then* y is male."[9] This sentence is plainly unique in the sense defined earlier if as a matter of fact there is only one gorilla who was born under the conditions specified. But suppose now that the description "the first gorilla born in captivity" was incorrectly used, and that there are actually three gorillas born in captivity simultaneously at the earliest time at which any gorillla was so born. And suppose further that their offspring are all male, so that the unrestricted sentence just set forth is still true. The sentence now remains unique, *because there exists only one instance of the time-variable in the sentence.* There is one set of arguments for which

[8] *Op. cit.*, p. 123.

[9] I have italicized the main connectives here in order to exhibit the structure of this sentence as clearly as possible.

the antecedent of the conditional is true, and any other set will overlap with this set with respect to the time-variable.

It is convenient to define a term applying to all sentences which are true, multiple, unrestricted, and underived. The term selected here is "fundamental." (13) A sentence is *fundamental* if and only if it is true, multiple, unrestricted, and underived. There would appear to be considerable justification for saying that the defining characteristics of fundamental sentences are also the defining characteristics of "laws," as that term is frequently used.[10] It is also true that "law" is sometimes used in such a way as to refer to what are here called "derived sentences," as well.[11] As was stated at the outset, this paper is not concerned with finding an answer to the question of how we come to accept any multiple underived unrestricted sentence as true. The point to be emphasized here is that the distinction between multiple and unique sentences appears to be useful in distinguishing laws from other universal sentences equally true and unrestricted. That some of the sentences which we accept as true *are* multiple, underived, and unrestricted can scarcely be denied. An example is the sentence "All sound waves travel at a velocity of 1080 feet per second at sea level." Sentences which are fundamental at a given time have this status relative to our knowledge at that time, i.e., sentences acquire and lose the status of being fundamental, as our knowledge changes.

According to the definitions here proposed, fundamental sentences are no less "accidental" than unique underived sentences, or restricted sentences that are not subsumed. Those to whom such a way of speaking appears bizarre or even contradictory should keep in mind certain points. In the first place, it is not claimed that the similarity between fundamental sentences and unique underived sentences is more important than their differences. Secondly, the fact that some multiple sentences are underived does not of course mean that there is no rational basis for our belief that they are true. And, thirdly, the thesis that some multiple sentences are "accidental" in the sense here defined is metaphysically neutral. The fact that some true sentences are multiple and underived may be thought of as pointing to the ultimate contingency at the heart of

[10] See, on this point, Goodman's discussion of sentences which are "lawlike" (*op. cit.*, p. 123 ff.).

[11] Universal vacuous statements about the properties of certain "ideal entities," such as "frictionless bodies," "a perfectly free market," etc., frequently appear to be regarded as "laws" in some sense, and are held to yield true counterfactuals. On the present view, they must be shown to be derived, if they are to be regarded as "yielding" true synthetic counterfactuals. The only alternative consistent with the present view is to interpret them as analytic, in which case they may of course "yield" analytic counterfactuals.

the universe, or as indicating the need for supra-scientific principles in terms of which our scientific laws can themselves be "explained," or as yielding no metaphysical inferences whatsoever; but one's choice among these views is not dictated by the distinctions and definitions offered in this paper.

II–1

I shall now try to answer Questions 1 and 2, which were posed at the beginning of the paper. Question 1 is "What sentences yield true counterfactuals?" In order to consider this question it is necessary to supply a definition for the term "yield." It is difficult to use this term with any precision in the present context unless it is defined more narrowly than is usually done, more narrowly, indeed, than would be required by the way in which the term was used in the introductory portion of the present paper. I shall discuss this point further a little later on. Here I shall define the phrase "to yield a counterfactual" as follows: (14) a singular or universal indicative conditional *yields a counterfactual* if and only if it differs from that counterfactual only in being formulated in the indicative rather than the subjunctive mood. The definition given does not of course provide a meaning for "yield" in other contexts. The relation between counterfactuals and the conditionals which yield them is purely syntactic, holding between sentences of two kinds regardless of their truth or falsity.

Since counterfactuals are, on the present view, temporally restricted, it follows that all sentences which yield them are also temporally restricted. "If anyone was in B at T he was hurt" yields "If anyone had been in B at T he would have been hurt," and "If anyone was in B at T he had blue eyes" yields "If anyone had been in B at T, he would have had blue eyes." A singular conditional which is a value of a temporally restricted universal conditional yields a singular counterfactual: "If John Smith was in B at T he was hurt," e.g., yields "If John Smith had been in B at T he would have been hurt."

Because counterfactuals include negation-sentences, it is clear that all sentences which yield true general counterfactuals must be vacuous, and that all sentences which yield true singular counterfactuals must have antecedents which are false. This requirement, however, provides only a necessary, not a sufficient, condition for ability to yield true counterfactuals.

The following thesis is now proposed for consideration: temporally restricted universal conditionals yield true general counterfactuals if and only if the former are both vacuous and subsumed. This will be called "Thesis A." The version of this thesis which

would apply to true singular counterfactuals will not be separately formulated and examined here. In one respect, Thesis A is non-analytic, for the terms "vacuous" and "subsumed" are defined without any reference to counterfactuals. Thesis A has also some initial plausibility. It does appear impossible to find any example of a temporally restricted sentence which yields a true general counterfactual and which is not both vacuous and subsumed; and it also appears impossible to find any example of a temporally restricted sentence which is both vacuous and subsumed and which does not yield a true general counterfactual. Can we then say that Thesis A has been confirmed? To say this is to assume that counterfactuals can be judged true or false by some criterion other than the vacuous and subsumed character of the sentences which yield them. This assumption is highly questionable.

We may believe that "If anyone had been in *B* at *T* he would have been hurt" is obviously true, and that "If anyone had been in *B* at *T* he would have had blue eyes" is obviously false. There are other counterfactuals, however, such as "If any leader in the period immediately following World War II had been of the calibre of Roosevelt, the United Nations would have been more effective," regarding whose truth-status we reach a decision only after much deliberation. This very process of deliberation appears to be the process of ascertaining whether the sentence which yields the counterfactual is vacuous and subsumed. Admittedly this process is usually difficult, and sometimes impossible, to carry out. A closer examination of our truth-judgments in easier cases seems also to lead to the same conclusion. In judging the counterfactual "If anyone had been in *B* at *T* he would have had blue eyes" to be false, i.e., we are actually judging that "Everyone in *B* at *T* had blue eyes" is either non-vacuous or non-subsumed or both.

If this account is correct, Thesis A is unverifiable, since we do not have separate criteria for judging a counterfactual to be true, and for judging it to be yielded by a temporally restricted sentence which is vacuous and subsumed. Moreover, as was pointed out much earlier, no one has (to my knowledge) suggested any independent criterion for judging a counterfactual to be true. We must, accordingly, replace Thesis A by Thesis B, which runs as follows: the process of verifying a (general) counterfactual is the process of judging whether or not it is yielded by a temporally restricted sentence which is vacuous and subsumed. The question "What sentences yield true counterfactuals?" therefore, is not a question to which a non-analytic answer can be directly given. Thesis B provides the closest approximation to a satisfactory direct answer to this question.

It may be objected that what we are really most interested in is the connection between unrestricted sentences and true counterfactuals, and not the connection here examined, that between restricted sentences and true counterfactuals. It is true that most discussions of sentences which "yield" true counterfactuals, including the discussion given in the beginning of this paper, are concerned with unrestricted sentences. I should point out, however, that it follows analytically from the definition of "subsumed" that the assertion that a sentence is subsumed is at the same time an assertion to the effect that a certain unrestricted sentence is true and either multiple or derived. The characteristic of being either multiple or derived may be regarded as the (only) "C-characteristic" referred to in the introductory discussion above, if it is assumed that the questions there considered were concerned with unrestricted sentences. As there promised, the terms for this characteristic of being either multiple or derived have been defined without reference to counterfactuals.

It would have been possible, though far more difficult, to have defined "to yield a counterfactual" so that it designated a syntactic relation between counterfactuals and certain unrestricted sentences. This would have enabled me to formulate a thesis parallel to Thesis B, but referring to unrestricted sentences. This procedure would have had some advantages, but for clarity and convenience and economy of space the simpler thesis has been formulated here. It is obvious that no sentence is either subsumed or derived unless some multiple unrestricted underived sentence can be shown to be true, and that this demonstration constitutes the most difficult part of the verification of a counterfactual. Even the demonstration that the negation-sentence in a general counterfactual is true, however, may involve some difficulty, since, as an existential sentence, it is equivalent to some universal sentence.

II–2

Question 2 remains to be answered, namely, "What is said in a counterfactual?" It is the core-sentence (singular or plural) of a counterfactual for which an analysis is now sought. In order to provide this analysis, I shall need to define two more terms: (15a and 15b) "must" in two different contexts.

The discussion of the method of verifying a counterfactual strongly suggests one possible analysis for a core-sentence of a general counterfactual. This is the interpretation of a core-sentence as the statement that the temporally restricted sentence which yields the counterfactual as a whole is subsumed. There would then be no other core-sentence. On this view, a general counter-

factual is analyzed as a conjunction of two sentences (here given as clauses), of the following form: "There is no x such that x is F at T; and the sentence 'For every x, if x is F at T, then x is G' is subsumed." Such a compound sentence is plainly verified by ascertaining that the conditional mentioned in the second constituent sentence (the core-sentence) is in fact vacuous and subsumed.

That the analysis just proposed is essentially the correct analysis of a general counterfactual will be here maintained, though admittedly it must be altered in certain respects. There are three chief objections which might be raised against this analysis as it stands. One is that the subjunctive mood, in which counterfactuals are formulated, does not lend itself to indicative translation in this way; another is that counterfactuals are a part of ordinary object-language and can not be rendered in syntax-language without distortion; and the third is that the analysis given can not easily be applied to singular counterfactuals. These objections will be considered in turn.

I shall assume that those who protest against "reducing" the subjunctive mood to the indicative mood do not take issue with the thesis previously advanced regarding the verification of counterfactuals (they may do so, of course, but that thesis must then be attacked separately). One can then reply that there is a peculiarity involved in saying that, although a counterfactual is verified by showing that something is the case, its meaning does not wholly consist in a statement to that effect. On such a view, a subjunctive counterfactual is half accessible to analysis and logical manipulation, and half not. It seems possible that those who object to rendering a subjunctive sentence in indicative terms overlook the fact that a subjunctive sentence is, after all, a declarative sentence, so that the arguments (admittedly strong) against translating a non-declarative sentence into declarative terms do not apply.

Much more forceful is the objection against analyzing a counterfactual either partly or wholly in syntax-language. In the analysis given above, the negation-sentence was in object-language; it seems clear that both parts of a counterfactual should be formulated in the same language, and that an object-language formulation should be sought. It is, however, comparatively easy to define an object-language term by which the core-sentence already proposed can be translated into object-language. For this purpose, I shall define "must" in two contexts, a universal conditional, and a singular conditional.

(15a) The relation "must in a universal conditional" holds between the antecedent and consequent of that conditional if and only if the conditional is non-accidental. The expression "For every x,

if x is F, then x must be G,'' is equivalent by definition to the expression ''The sentence 'For every x, if x is F, then x is G' is non-accidental.'' The relation ''must'' thus holds directly between the antecedent and consequent of a universal conditional precisely as the more usual ''if . . . then . . .'' relation does. The present definition is deliberately formulated in terms sufficiently general to apply to unrestricted sentences as well as restricted ones, since it is useful to be able to convey in object-language the information that unrestricted sentences are derived, as well as that restricted sentences are subsumed. We can now translate a syntax-language sentence such as ''The sentence 'Everyone in B at T was hurt' is non-accidental'' into an object-language sentence, namely, ''Everyone in B at T must have been hurt.'' Thus the analysis of a general counterfactual given above can now be formulated wholly in object-language, as follows: ''There is no x such that x is F at T; and for every x, if x is F at T, then x must be G.'' That this is the correct analysis of a general counterfactual is the conclusion reached in this paper.

(15b) The relation ''must in a singular conditional'' holds between the antecedent and consequent of that conditional if and only if the singular conditional is a value of a universal conditional which is non-accidental. The expression ''If A is F, then A must be G'' is equivalent by definition to the expression ''The sentence 'If A is F, then A is G' is a value of a universal conditional which is non-accidental.'' The present definition enables us to meet the third of the three objections cited above, since it provides without difficulty an analysis for singular counterfactuals, as follows: ''It is not the case that A is F at T; and if A is F at T, then A must be G.''

It may be claimed that the ''must-conditionals'' here set up correspond to subjunctive conditionals of the non-counterfactual or ''deliberative'' [12] kind, and that some kind of subjunctive formulation of these would have been closer to common usage. I should reply that the auxiliary verb ''must'' is actually used in common speech in a way which does not conflict with the use made of this word here, and that, moreover, there are reasons why a subjunctive formulation should definitely be avoided. One such reason is the fact that ''must'' is far easier to handle both verbally and symbolically; but a stronger reason is that the very fact that the subjunctive is also used in counterfactuals leads to confusion. It is not unusual to encounter the belief that connections of the kind holding in must-conditionals occur only counterfactually, or can be spoken of only in counterfactuals.

[12] This term is used by Roderick Firth in a discussion cited by Chisholm (*op. cit.*).

I shall summarize the view set forth in this paper as maintaining that counterfactuals assert (in part) that certain indicative conditionals possess certain characteristics, terms for which are definable without reference to counterfactuals. These assertions made in counterfactuals rest ultimately on demonstrations that certain multiple underived sentences are true. It can not be denied that we sometimes attempt to "test" the truth of a universal statement by asking whether we should wish to assert a counterfactual having a certain syntactical relation to it. According to the position here defended, this procedure may indeed be psychologically useful, just as putting any question in another way is often useful, even though the information required to answer the second version of the question is the same as that required to answer the first version. More than this, however, can not be said. In conclusion, I should like to suggest that the alleged distinction between universal statements which hold only for actual cases and those which also "include reference to hypothetical statements about possible experience [13] rests upon a failure to construe correctly the full scope of an unrestricted universal sentence. If we know what will happen in *all* actual cases of a certain event or state of affairs, past, present, and future, we can not ask to know anything more.

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BOOK REVIEW

The Divine Relativity: A Social Conception of God. CHARLES HARTSHORNE. New Haven, Connecticut: Yale University Press. 1948. xvi + 164 pp. $2.75.

The aim of Professor Hartshorne's *The Divine Relativity* is to present a conception of God which will be both logically consistent and religiously adequate (p. 1). The main object of attack in the book is the conception of God as absolute in all respects. Such a God, it is held, can satisfy neither the requirements of philosophy nor of religion. Either the traditional Supreme Being, absolute in every respect, must be wholly unrelated to the world, and thus irrelevant both to religion and philosophy, or else, if he is related to it, that world must be wholly necessary and there can be no contingency or freedom in it (pp. 15, 116 ff.). Religion demands that God be genuinely related to the world with all of its chance and change, so that what happens in it really

[13] C. I. Lewis, *An Analysis of Knowledge and Valuation* (Open Court, 1946), p. 224.

makes a difference to him, and yet that he also be a *supreme* being, in some sense infinite in wisdom, goodness, and power.

The conception of deity which Hartshorne believes will satisfy both the philosophical and religious requirements is based chiefly upon the cosmological scheme of Whitehead. According to this scheme, events are constituted by social relationships, incorporated as feelings, welded into novel unities by an on-going self-creative process. These events form the basis for the whole series of organisms—societies and societies of societies—which constitute the actual world (pp. 28 f.). According to this view, the totality of actual things is also an organism, an all-inclusive society of societies. God, the Supreme Individual, contains the entire universe. He is not "merely the cosmos, in all aspects inseparable from the sum or system of dependent things or effects; he is both this system and something independent of it" (p. 90). This view is not pantheism, since God, the whole, is more than the sum of his parts, but may rather be classified (as Hartshorne does) as a form of *panentheism* (pp. 88 ff.).

Such a God supplies in a pre-eminent way the demand for responsiveness to the changing actual world, that is, for a God completely sensitive to, or "relative" to, the world. Since he literally contains the actual world, all that happens in that world must also happen in identical fashion to him. Thus God is "supremely relative" to the world. It is this "surrelativism" which lies at the basis of Hartshorne's conception of "the Divine Relativity."

Yet Hartshorne's God is not *merely* relative, as he would be if he were no more than the sum of the constituents of the actual world. He also has an absolute essence. Thus he knows perfectly all that can be known—that is, all possibility as possible and all actuality as actual (p. 121). He is also maximally good, through his "aim at the one primary good, which is that the creatures should enjoy rich harmonies of living, and pour this richness into the one ultimate receptacle of all achievement, the life of God" (pp. 127 f.). Finally, he is perfect in power, balancing freedom and order in the world, not by force but by "persuasion," through the presentation of himself in his perfection as an object of knowledge to the creatures (p. 142). In these absolute aspects God is eternal and changeless, because they refer to *types* of relationships to the creatures (Ch. III). It is only in reference to the particular contents of the actual relationships that God is relative. For example, God's knowledge is always absolutely adequate, but the content of this adequate knowledge is relative to the state of the world at the time of knowing.

As in the case of Whitehead's God, with his "primordial

nature" and his "consequent nature," Hartshorne's deity has a two-fold (Absolute-Relative) nature. The meaning of these two aspects is clarified by means of a number of further contrasts. On the one hand, he is *necessary* (p. 32). He is the fundamental metaphysical concept, an *a priori* implication of any existence whatsoever. On the other hand, he is *contingent,* through his incorporation of the world with all of its contingency. As absolute he is *independent;* as relative he is completely *dependent* on the world (pp. 71 ff.). In his rôle as divine orderer and persuader he is the *creator, eternal* in his purposes and character; as inclusive of the world, he is *created* and *temporal* (pp. 29 f., 79). He is thus both the supreme *cause* of all things (pp. 134 ff.) and the preeminent *effect* (p. 79). As he presents himself to the world, he is the highest *object* of awareness; as the world is known by him, he is the supreme *subject* (pp. 70 f.). His absolute nature is *abstract;* as *concrete* and changing he includes and is therefore superior to his abstract nature, as the concrete always is superior to and inclusive of the abstract (pp. 79 ff.).

These are the main features of Hartshorne's "social conception of God." His analysis is in many respects praiseworthy. His insistence on logical rigor and maximum possible clarity of terminology seem requisite for any sound philosophy of religion. The recognition that "paradox" is only an indication of inadequate logical analysis is a needed counteraction of current theological fashions regarding it as an inevitable consequence of man's finitude and sinfulness (pp. 3 ff.).

Perhaps the most important contribution of the book is its insistence that the idea of the divine embody fully the insight that deity, in so far as relevant to the world, can never know or act "absolutely" or abstractly, but must inevitably act in the context of actual situations, and in terms of the particular values of the variables defining them. Adherence to a conception of deity as absolute in every respect leads either to logical absurdities, with the resulting disparagement of religion by thoughtful people, or to a religion of otherworldliness so totally unrelated to the problems of the actual world as to serve chiefly as an escape from them. Hartshorne's emphasis on the reality of freedom and contingency and on making a place for them in a logically consistent philosophy of religion is also important.

Fortunately, however, these positive values in Hartshorne's analysis do not necessarily involve the acceptance of the ingenious but in many respects incredible cosmological scheme which he adopts. It is not necessary to be a Whiteheadian to be able to deal with religious and ethical issues without recourse to paradox,

and to find in nature, including man and his freedom, grounds for a religion concerned with the actual complexities of particular situations yet cognizant also of purposes and powers transcending and transforming the actual.

In considering the shortcomings of *The Divine Relativity,* it should be pointed out first that Hartshorne's treatment of the tradition is often unfair. For example, the reader gains the impression from the book that theologians like Aquinas simply made logical blunders which should have been apparent to any careful thinker. Hartshorne seems constantly astonished that in the doctrine of God logical demands so evident to him should have been so completely disregarded by the greatest thinkers. He apparently ascribes the error largely to the false assumption that the "relative" must always be inferior to the "absolute" and hence that a Perfect Being must in all respects be absolute (p. 18). This is a superficial view of the matter. The real points at issue between the "great tradition" and the new theism are primarily the doctrine of creation and the related doctrine of freedom. To the traditional analysis of these fundamental issues Hartshorne gives virtually no attention. It is not superior logical clarity, but the development of a philosophy of emergence, stimulated by modern biological concepts, that makes relativistic conceptions of deity credible. It is this same recent theory of emergence that underlies the indeterminist view of freedom, with its associated three-value logic—a view quite different from the concepts of freedom entertained by most classical theologians and philosophers. Hartshorne would have been more just to those of the tradition he criticizes not only had he acknowledged their recognition of the difficulties he raises, and had he analyzed more fully the solutions offered by them, but had he also indicated the fundamental philosophic contexts with which his theological concepts and the classical ones, respectively, are integral—contexts between which any final preference is by no means yet definitely established.

Hartshorne regards his book as "an essay in metaphysics," which purports as such to deal with what is common to all possible being. His method, like that of Whitehead, is to set up a scheme of categories which are then tested both as to logical consistency and as to adequacy in expressing experience in all its breadth and depth. The perils in this philosophic method into which readers not already committed to the philosophy of organism will probably feel Hartshorne falls are the tendency to disregard the claims of alternative categoreal schemes, the relatively meagre extent of direct experiential verification, the high degree of extrapolation from available experience employed, and the tendency to hypos-

tatize whatever happens to be valued most highly. Anyone who is metaphysically cautious or endowed with an experimental temper will wonder how Professor Hartshorne could possibly know that this system so neatly and consistently devised actually refers to the real experienced world. The answer to this would involve the proofs for the existence of God, and these the author does not attempt to present in this book (p. xii). Most readers may feel that this question is really the crucial one, and therefore that the argument of *The Divine Relativity* is too hypothetical to be satisfying.

It seems very unlikely to the present reviewer that as a matter of fact the totality of all things does in any sense constitute an organism or an individual and hence that the supreme being described by Hartshorne exists at all. A study of the forms of organization actually observed in the world appears to reveal a definite limitation on the size and complexity which organisms may attain without becoming unstable. That the aggregate of all things (assuming that there is a meaning even to such a totality) should form a real organic unity is, from this point of view, next to impossible. It is one thing to assert, as experience indicates we should, that there are in nature tendencies or drives towards unification, or even existing systematic unities, quite another thing to insist, as Hartshorne does, that in some intelligible sense the aggregate of all things already *is* an organic whole.

The lack of empirical justification for Hartshorne's concept of deity is illustrated in connection with the attribute of omnipotence. As causally adequate, God preserves at all times and in terms of all particular states of the world the absolutely optimum balance between risk and opportunity. "Providence is not the prevention of chance, but its optimization" (p. 137). As the author himself observes, there can be no empirical verification of such an optimization of the ratio of risk and opportunity. All he claims to have done is "to formulate an idea of adequate cosmic power that is apparently free from the absurdities that haunt traditional notions of omnipotence" (p. 138). The real question is whether the formulation of consistent ideas, with so tenuous a connection with observed occurrences, can serve any more usefully than as an exercise in logic. It would in fact be easy to present good evidence in support of the contention that the balance between threat and promise is much less than optimal.

Another chief source of confusion in Professor Hartshorne's analysis appears to lie in his erroneous theory of knowledge, according to which knowing is in effect identified with being. This view is developed in the discussions in *The Divine Relativity* dealing with the problem of external and internal relations (pp. 6 ff.,

Ch. II). The cognitive relationship, it is pointed out, must be internal with respect to the subject knower and external with respect to the object known. This means that the object known must be *constitutive* of the knower. The character of this constituency is further determined by the conception of knowledge as direct intuition of feeling, so that one can know only what is directly felt. Applied to human cognition, this theory means that man can really know only the states of his own body (apart from the possibility of some sort of telepathic communication). The extension of this ideal of knowledge to God means that, if he is to be conceived as omniscient, the world must be his body, each part of which is directly felt, and therefore known. According to this theory of knowledge, it is therefore easy to see how the demand that God fully *know* all things should be equivalent to the insistence that he literally *include* them.

A more reasonable realistic theory of knowledge, it appears, would regard knowing as a function by means of which the knower becomes aware of the objective intelligible structures of things beyond himself. According to such a view, to know an object means to grasp its intelligible structure, not to become in part constituted by the object. The perfect case of knowing would not, as in Hartshorne, be that of identification by inclusion, but of total cognitive awareness. (That any *being* with such perfect insight actually exists in nature seems extremely unlikely.) A knower's cognition of particular objects enriches his experience and therefore alters him, but it does not follow that this alteration consists in some sort of *incorporation* of the known objects into himself. On the contrary, a sound theory of knowledge should insist on the real *otherness* of what is known. There is nothing inconsistent in an idea of God as fully knowing the world, with all of its changes, and yet not embodying it.

Although the book under review, as already mentioned, does not contain the arguments for the existence of God, it seems that these are dependent on the theory of knowledge here criticized, and therefore will stand or fall with that theory. This is particularly true in the case of the ontological argument, which Hartshorne defends in other writings. This argument of course rests primarily upon the assumed identity of idea with existence—though the manner in which this applies to the concept of the deity requires extensive elaboration.

Another corollary of the theory of knowledge employed by Hartshorne is the "cosmic snowball" view of the world, gathering the past into itself as it rolls through time. If knowing means inclusion of the object known, then memory, or knowledge of the

past, must involve the inclusion of the past as constitutive of the present. On such a view, it is hard to see how any effective discrimination between past and present would be possible. Again a more reasonable view would be to regard the knowing of the past as cognition of something which the present does *not* actually include.

This theory is also the basis for Hartshorne's doctrine of the conservation of values, which he regards as essential to a religious view of the world. Values are conserved through their incorporation into God's perfect memory, which, unlike human memory, preserves for all time all things as immediately felt (pp. 133 f., 137 f.). It is difficult to reconcile this demand for permanence with the whole idea of process, with its emphasis on values as immediate and as relative to given situations. Under certain circumstances, but certainly not under all, a degree of permanence may be a value. To require that divine perfection guarantee the sort of absolute permanence which Hartshorne's theory suggests is therefore hard to understand. His theory amounts to a reinterpretation in social terms of the traditional religious hope of immortality. As such, it is likely to prove as unsatisfying to the pious as it will be incredible to the critical-minded.

Another serious confusion arising from Hartshorne's theory of knowledge is his identification of virtue with knowledge (pp. 124 ff.). If knowing means feeling, the knowing entails its own motivation. Knowing and willing are one and the same. Common experience refutes this identification. It is to twist the meaning of the word "knowledge" out of all recognition to assert, for example, that the deliberate refusal to employ the means recognized as conducive to a desired end results simply from lack of knowledge.

In summary, in *The Divine Relativity* Professor Hartshorne raises certain important problems to which traditional theism has never given definitive answers. He rightly appeals on behalf of logical clarity in theology and states the case persuasively for a relativistic conception of the divine. However, his conception of the deity as an absolute-relative supreme being appears to be dependent upon and largely vitiated by an erroneous theory of knowledge and to lack any adequate empirical support. In spite of, or in part even because of, these shortcomings, this is a stimulating book, which makes a real contribution to current metaphysical and theological thought.

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